APPENDIX A

SOIL VAPOR DATA VALIDATION REPORT
SIXTH LONG-TERM SAMPLING EVENT

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Geofon, Inc.
22632 Golden Springs Drive, Suite 270
Diamond Bar, CA 91765
ATTN: Mr. Leo Williamson

March 5, 2001

SUBJECT: NASA JPL, Data Validation

Dear Mr. Williamson,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on February 28, 2001. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 6038:

SDG #	Fraction
2K1218W1, 2K1219W1, 2K1220W1, 2K1221W1, 2K1222W1, 2K1227W1, 2K1228W1	Volatile Halogenated/Aromatic Hydrocarbons

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996

Please feel free to contact us if you have any questions.

Sincerely,

Richard M. Amano
President/Principal Chemist

Attachment 1

LDC #6038 (Geofon, Inc. / NASA JPL)

Project #04-4304-480, DO #48

LDC	SDG#	DATE REC'D	DATE DUE	HVOC /BTEX (8010/8020)																																	
Matrix: Carbon/Water/Soil				A	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	2K1218W1	2-28-01	3-7-01	10	0																																
B	2K1219W1	2-28-01	3-7-01	16	0																																
C	2K1220W1	2-28-01	3-7-01	11	0																																
D	2K1221W1	2-28-01	3-7-01	12	0																																
E	2K1222W1	2-28-01	3-7-01	12	0																																
F	2K1227W1	2-28-01	3-7-01	9	0																																
G	2K1228W1	2-28-01	3-7-01	10	0																																
Total				80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Shaded cells indicate Level D validation (all other cells are Level C validation)

6038ST.GEO

NASA JPL
Data Validation Reports
LDC# 6038

Volatile Halogenated/Aromatic Hydrocarbons

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: December 18, 2000

LDC Report Date: March 1, 2001

Matrix: Air

Parameters: Volatile Halogenated/Aromatic Hydrocarbons

Validation Level: EPA Level III

Laboratory: HP Labs

Sample Delivery Group (SDG): 2K1218W1

Sample Identification

SVW25-VPA-001
SVW25-VPB-002
SVW25-VPI-003
SVW25-VPJ-004
SVW26-VPB-005
SVW26-VPB-006DUP
SVW26-VPF-007
SVW26-VPG-008
SVW26-VPH-009
SVW26-VPI-010

Introduction

This data review covers 10 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 8010 and 8020 for Volatile Halogenated/Aromatic Hydrocarbons.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by these methods.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

b. Calibration Verification

Calibration verification was performed at the required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile halogenated/aromatic hydrocarbon contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the methods. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

Samples SVW26-VPB-005 and SVW26-VPB-006DUP were identified as field duplicates. No volatile halogenated/aromatic hydrocarbons were detected in any of the samples.

X. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Volatile Halogenated/Aromatic Hydrocarbons - Data Qualification Summary - SDG 2K1218W1

No Sample Data Qualified in this SDG

NASA JPL
Volatile Halogenated/Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG 2K1218W1

No Sample Data Qualified in this SDG

60384

HP Labs

GEOFON PROJECT # 04-4304-480
JPL
4800 OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #2K1218W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	SVW25-VPA-001	SVW25-VPB-002	SVW25-VPI-003	SVW25-VPJ-004	SVW26-VPB-005
DATE	12/18/00	12/18/00	12/18/00	12/18/00	12/18/00	12/18/00
SAMPLING TIME	05:55	07:52	08:24	09:33	10:00	10:27
ANALYSIS TIME	05:58	07:56	08:27	09:36	10:02	10:31
SAMPLING DEPTH (feet)	--	20	40	180	190	35
VOLUME WITHDRAWN (cc)	200	80	160	720	760	140
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	98%	101%	95%	101%	101%	96%
CHLOROBENZENE	91%	100%	95%	99%	100%	99%
4 BROMOFLUORO BENZENE	93%	102%	97%	100%	103%	101%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

3/2/01

HP Labs

GEOFON PROJECT # 04-4304-480
JPL
4800 OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #2K1218W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	SVW26-VPB-006 DUP	SVW26-VPF-007	SVW26-VPG-008	SVW26-VPH-009	SVW26-VPI-010
DATE	12/18/00	12/18/00	12/18/00	12/18/00	12/18/00
SAMPLING TIME	10:45	11:16	11:40	12:05	12:28
ANALYSIS TIME	10:55	11:20	11:45	12:09	12:33
SAMPLING DEPTH (feet)	35	115	140	160	180
VOLUME WITHDRAWN (cc)	140	460	560	640	720
VOLUME INJECTED	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1
CARBON TETRACHLORIDE	nd	1.3	4.0	5.8	2.5
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	1.1	1.6	3.3
VINYL CHLORIDE	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd
SURROGATES					
1,4 DIFLUORO BENZENE	94%	99%	96%	98%	94%
CHLOROBENZENE	95%	100%	97%	98%	98%
4 BROMOFLUORO BENZENE	100%	102%	102%	101%	100%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

3/2/01

LDC #: 6038A23 **VALIDATION COMPLETENESS WORKSHEET**

SDG #: 2K1218W1 X EPA Level III ___NFESC Level C

Laboratory: HP Labs

Date: 2/28/01
Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC Volatile Halogenated/Aromatic Hydrocarbons (EPA SW 846 Method 8010/8020)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/18/00
IIa.	Initial calibration	A	%RSD
IIb.	Calibration verification	A	%D
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	
IVc.	Laboratory control samples	~~P~~ N/A	
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	D = 5 + 6
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

AIR

1	SVW25-VPA-001	11	BLANK	21		31	
2	SVW25-VPB-002	12		22		32	
3	SVW25-VPI-003	13		23		33	
4	SVW25-VPJ-004	14		24		34	
5	SVW26-VPB-005 D	15		25		35	
6	SVW26-VPB-006DUP D	16		26		36	
7	SVW26-VPF-007	17		27		37	
8	SVW26-VPG-008	18		28		38	
9	SVW26-VPH-009	19		29		39	
10	SVW26-VPI-010	20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: December 19, 2000

LDC Report Date: March 1, 2001

Matrix: Air

Parameters: Volatile Halogenated/Aromatic Hydrocarbons

Validation Level: EPA Level III

Laboratory: HP Labs

Sample Delivery Group (SDG): 2K1219W1

Sample Identification

SVW27-VPA-011
SVW27-VPA-012DUP
SVW27-VPB-013
SVW27-VPC-014
SVW27-VPD-015
SVW27-VPE-016
SVW27-VPF-017
SVW27-VPF-018DUP
SVW27-VPG-019
SVW27-VPH-020
SVW27-VPI-021
SVW27-VPJ-022
SVW28-VPA-023
SVW28-VPA-024DUP
SVW28-VPD-025
SVW28-VPE-026

Introduction

This data review covers 16 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 8010 and 8020 for Volatile Halogenated/Aromatic Hydrocarbons.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by these methods.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

b. Calibration Verification

Calibration verification was performed at the required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile halogenated/aromatic hydrocarbon contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the methods. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

Samples SVW27-VPA-011 and SVW27-VPA-012DUP, samples SVW27-VPF-017 and SVW27-VPF-018DUP, and samples SVW28-VPA-023 and SVW28-VPA-024DUP were identified as field duplicates. No volatile halogenated/aromatic hydrocarbons were detected in any of the samples.

X. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Volatile Halogenated/Aromatic Hydrocarbons - Data Qualification Summary - SDG 2K1219W1

No Sample Data Qualified in this SDG

NASA JPL
Volatile Halogenated/Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG 2K1219W1

No Sample Data Qualified in this SDG

6038B

HP Labs

GEOFON PROJECT # 04-4304-480
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #2K1219W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	SVW27-VPA-011	SVW27-VPA-012 DUP	SVW27-VPB-013	SVW27-VPC-014	SVW27-VPD-015
DATE	12/19/00	12/19/00	12/19/00	12/19/00	12/19/00	12/19/00
SAMPLING TIME	05:50	07:03	07:22	07:52	08:13	08:35
ANALYSIS TIME	05:50	07:04	07:28	07:53	08:17	08:41
SAMPLING DEPTH (feet)	--	20	20	35	60	85
VOLUME WITHDRAWN (cc)	200	80	80	140	240	340
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	109%	98%	99%	92%	96%	96%
CHLOROBENZENE	101%	94%	98%	92%	96%	97%
4 BROMOFLUORO BENZENE	103%	98%	102%	95%	99%	99%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

9/3/2/01

HP Labs

GEOFON PROJECT # 04-4304-480
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #2K1219W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	SVW27-VPE-016	SVW27-VPF-017	SVW27-VPF-018 DUP	SVW27-VPG-019	SVW27-VPH-020	SVW27-VPI-021
DATE	12/19/00	12/19/00	12/19/00	12/19/00	12/19/00	12/19/00
SAMPLING TIME	09:10	09:32	09:54	10:19	10:41	11:07
ANALYSIS TIME	09:10	09:34	09:57	10:21	10:46	11:10
SAMPLING DEPTH (feet)	100	120	120	140	160	180
VOLUME WITHDRAWN (cc)	400	480	480	560	640	720
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	3.8	nd	nd	2.6	nd	8.0
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	nd	nd	nd	1.4
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	98%	92%	99%	104%	101%	102%
CHLOROBENZENE	94%	92%	99%	102%	102%	104%
4 BROMOFLUORO BENZENE	99%	95%	103%	107%	104%	106%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

1/3/01

HP Labs

GEOFON PROJECT # 04-4304-480
JPL
OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #2K1219W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	SVW27-VPJ-022	SVW28-VPA-023	SVW28-VPA-024 DUP	SVW28-VPD-025	SVW28-VPE-026
DATE	12/19/00	12/19/00	12/19/00	12/19/00	12/19/00
SAMPLING TIME	11:28	12:15	12:42	13:03	13:28
ANALYSIS TIME	11:33	12:22	12:45	13:09	13:33
SAMPLING DEPTH (feet)	205	20	20	80	105
VOLUME WITHDRAWN (cc)	820	80	80	320	420
VOLUME INJECTED	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1
CARBON TETRACHLORIDE	2.1	nd	nd	nd	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	nd	nd	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd
TRICHLORO ETHENE	2.1	nd	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd
1,1,2-TRICHLORO TRIFLUOROETHANE (FR113)	nd	nd	nd	nd	nd
BENZENE	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd
SURROGATES					
1,4 DIFLUORO BENZENE	99%	101%	97%	104%	98%
CHLOROBENZENE	100%	101%	100%	106%	97%
4 BROMOFLUORO BENZENE	103%	103%	102%	112%	101%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

3/2/01

LDC #: 6038B23 **VALIDATION COMPLETENESS WORKSHEET** Date: 2/28/01
SDG #: 2K1219W1 X EPA Level III __NFESC Level C Page: 1 of 1
Laboratory: HP Labs Reviewer: PT
2nd Reviewer:

METHOD: GC Volatile Halogenated/Aromatic Hydrocarbons (EPA SW 846 Method 8010/8020)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/19/00
IIa.	Initial calibration	A	% RSD
IIb.	Calibration verification	A	%D
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	
IVc.	Laboratory control samples	~~PT~~ N/A	
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	ND	D_1 = 1,2 D_2=7&8 D_3 = 13+14
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

All R

1	SVW27-VPA-011 D	11	SVW27-VPI-021	21		31	
2	SVW27-VPA-012DUP D	12	SVW27-VPJ-022	22		32	
3	SVW27-VPB-013	13	SVW28-VPA-023 D_3	23		33	
4	SVW27-VPC-014	14	SVW28-VPA-024DUP D_3	24		34	
5	SVW27-VPD-015	15	SVW28-VPD-025	25		35	
6	SVW27-VPE-016	16	SVW28-VPE-026	26		36	
7	SVW27-VPF-017 D_1	17	BLK	27		37	
8	SVW27-VPF-018DUP D_1	18		28		38	
9	SVW27-VPG-019	19		29		39	
10	SVW27-VPH-020	20		30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NASA JPL

Collection Date: December 20, 2000

LDC Report Date: March 1, 2001

Matrix: Air

Parameters: Volatile Halogenated/Aromatic Hydrocarbons

Validation Level: EPA Level III

Laboratory: HP Labs

Sample Delivery Group (SDG): 2K1220W1

Sample Identification

SVW33-VPA-027
SVW33-VPD-028
SVW33-VPE-029
SVW33-VPE-030DUP
SVW33-VPF-031
SVW33-VPG-032
SVW33-VPJ-033
SVW36-VPB-034
SVW36-VPC-035
SVW36-VPC-036DUP
SVW36-VPE-037

Introduction

This data review covers 11 air samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 8010 and 8020 for Volatile Halogenated/Aromatic Hydrocarbons.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by these methods.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

b. Calibration Verification

Calibration verification was performed at the required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile halogenated/aromatic hydrocarbon contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the methods. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were not required by the method.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

Samples SVW33-VPE-029 and SVW33-VPE-030DUP and samples SVW36-VPC-035 and SVW36-VPC-036DUP were identified as field duplicates. No volatile halogenated/aromatic hydrocarbons were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD
	SVW33-VPE-029	SVW33-VPE-030DUP	
Carbon tetrachloride	27	24	12
1,1-Dichloroethene	3.0	3.0	0
1,1,2-Trichlorotrifluoroethane	7.0	6.5	7.4

Compound	Concentration (ug/L)		RPD
	SVW36-VPC-035	SVW36-VPC-036DUP	
Carbon tetrachloride	61	67	9.4
Chloroform	1.7	1.8	5.7
1,1-Dichloroethene	8.2	7.5	8.9
1,1,1-Trichloroethane	29	30	3.4
Trichloroethene	28	31	10

Compound	Concentration (ug/L)		RPD
	SVW36-VPC-035	SVW36-VPC-036DUP	
1,1,2-Trichlorotrifluoroethane	1.0	1.0	0

X. Field Blanks

No field blanks were identified in this SDG.

NASA JPL
Volatile Halogenated/Aromatic Hydrocarbons - Data Qualification Summary - SDG 2K1220W1

No Sample Data Qualified in this SDG

NASA JPL
Volatile Halogenated/Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG 2K1220W1

No Sample Data Qualified in this SDG

6038C

HP Labs

GEOFON PROJECT # 04-4304-480
JPL
4800 OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #2K1220W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	BLANK	SVW33-VPA-027	SVW33-VPD-028	SVW33-VPE-029	SVW33-VPE-30 DUP	SVW33-VPF-031
DATE	12/20/00	12/20/00	12/20/00	12/20/00	12/20/00	12/20/00
SAMPLING TIME	05:42	06:50	07:15	07:35	07:57	08:22
ANALYSIS TIME	05:42	06:52	07:15	07:39	08:04	08:29
SAMPLING DEPTH (feet)	--	20	85	105	105	120
VOLUME WITHDRAWN (cc)	200	80	340	420	420	480
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	nd	nd	18	27	24	26
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	nd	nd	4.0	3.0	3.0	2.5
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	1.0	nd	nd	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	nd	3.7	3.1	7.0	6.5	3.5
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	105%	100%	98%	98%	107%	101%
CHLOROBENZENE	96%	101%	98%	99%	109%	102%
4 BROMOFLUORO BENZENE	99%	104%	102%	101%	111%	104%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

3/2/01

HP Labs

GEOFON PROJECT # 04-4304-480
JPL
4800 OAK GROVE DRIVE
PASADENA, CA

HP Labs Project #2K1220W1
GC SHIMADZU 14A FRONT
VOLATILE HALOGENATED AND AROMATIC HYDROCARBONS (EPA Method 8010/8020) ANALYSES OF SOIL VAPOR
SOIL VAPOR DATA IN UG/L-VAPOR

	SVW33-VPG-032	SVW33-VPJ-033	SVW36-VPB-034	SVW36-VPC-035	SVW36-VPC-036 DUP	SVW36-VPE-037
DATE	12/20/00	12/20/00	12/20/00	12/20/00	12/20/00	12/20/00
SAMPLING TIME	08:53	09:12	09:38	10:02	10:23	10:48
ANALYSIS TIME	08:54	09:18	09:42	10:06	10:30	10:54
SAMPLING DEPTH (feet)	140	200	35	55	55	92
VOLUME WITHDRAWN (cc)	560	800	140	220	220	370
VOLUME INJECTED	1	1	1	1	1	1
DILUTION FACTOR	1	1	1	1	1	1
CARBON TETRACHLORIDE	13	nd	9.9	61	67	nd
CHLOROETHANE/BROMOMETHANE	nd	nd	nd	nd	nd	nd
CHLOROFORM	1.2	nd	nd	1.7	1.8	nd
1,1-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,2-DICHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1-DICHLORO ETHENE	1.5	nd	nd	8.2	7.5	nd
CIS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
TRANS-1,2-DICHLORO ETHENE	nd	nd	nd	nd	nd	nd
DICHLOROMETHANE	nd	nd	nd	nd	nd	nd
TETRACHLORO ETHENE	nd	nd	nd	nd	nd	nd
1,1,1,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,2,2-TETRACHLORO ETHANE	nd	nd	nd	nd	nd	nd
1,1,1-TRICHLORO ETHANE	nd	nd	3.8	29	30	nd
1,1,2-TRICHLORO ETHANE	nd	nd	nd	nd	nd	nd
TRICHLORO ETHENE	nd	nd	4.5	28	31	nd
VINYL CHLORIDE	nd	nd	nd	nd	nd	nd
TRICHLOROFLUOROMETHANE (FR11)	nd	nd	nd	nd	nd	nd
DICHLORODIFLUOROMETHANE (FR12)	nd	nd	nd	nd	nd	nd
1,1,2-TRICHLOROTRIFLUOROETHANE (FR113)	3.1	nd	nd	1.0	1.0	nd
BENZENE	nd	nd	nd	nd	nd	nd
ETHYLBENZENE	nd	nd	nd	nd	nd	nd
TOLUENE	nd	nd	nd	nd	nd	nd
m&p-XYLENES	nd	nd	nd	nd	nd	nd
o-XYLENE	nd	nd	nd	nd	nd	nd
SURROGATES						
1,4 DIFLUORO BENZENE	109%	101%	101%	101%	99%	99%
CHLOROBENZENE	109%	101%	102%	101%	101%	102%
4 BROMOFLUORO BENZENE	112%	105%	105%	104%	104%	104%

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 1.0 UG/L-VAPOR FOR EACH COMPOUND

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)
ANALYSES PERFORMED BY: ALLEN GLOVER
DATA REVIEWED BY: JAMES E. PICKER

3/2/01

LDC #: 6038C23 **VALIDATION COMPLETENESS WORKSHEET**

SDG #: 2K1220W1 X EPA Level III ___NFESC Level C

Laboratory: HP Labs

Date: 2/28/01 ~~6038C23~~

Page: 1 of 1

Reviewer: FI

2nd Reviewer: ~

METHOD: GC Volatile Halogenated/Aromatic Hydrocarbons (EPA SW 846 Method 8010/8020)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/20/00
IIa.	Initial calibration	A	%RSD
IIb.	Calibration verification	A	%D
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	
IVc.	Laboratory control samples	~~FI~~ N A	
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D = 3 + 4 D_1 = 9 + 10
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

+ 1	SVW33-VPA-027	+ 11	SVW36-VPE-037	21		31	
+ 2	SVW33-VPD-028	12	BLK	22		32	
+ 3	SVW33-VPE-029 D	13		23		33	
+ 4	SVW33-VPE-030DUP D	14		24		34	
+ 5	SVW33-VPF-031	15		25		35	
+ 6	SVW33-VPG-032	16		26		36	
- 7	SVW33-VPJ-033	17		27		37	
+ 8	SVW36-VPB-034	18		28		38	
+ 9	SVW36-VPC-035 D_1	19		29		39	
+ 10	SVW36-VPC-036DUP D_1	20		30		40	

Notes: _____

LDC #: 6038C23
SDG #: 2K122OW1

TARGET COMPOUND WORKSHEET

Page: 1 of 1
Reviewer: FT
2nd Reviewer:

METHOD: VOA (EPA SW 846 Method 8240/8260/8021))

A. Chloromethane*	P. Bromodichloromethane	EE. Ethylbenzene**	TT. 1,2-Dibromoethane	III. n-Butylbenzene
B. Bromomethane	Q. 1,2-Dichloropropane**	FF. Styrene	UU. 1,1,1,2-Tetrachloroethane	JJJ. 1,2-Dichlorobenzene
C. Vinyl choride**	R. cis-1,3-Dichloropropene	GG. Xylene, total	VV. Isopropylbenzene	KKK. 1,2,4-Trichlorobenzene
D. Chloroethane	S. Trichloroethene	HH. Vinyl acetate	WW. Bromobenzene	LLL. Hexachlorobutadiene
E. Methylene chloride	T. Dibromochloromethane	II. 2-Chloroethylvinyl ether	XX. 1,2,3-Trichloropropane	MMM. Naphthalene
F. Acetone	U. 1,1,2-Trichloroethane	JJ. Dichlorodifluoromethane	YY. n-Propylbenzene	NNN. 1,2,3-Trichlorobenzene
G. Carbon disulfide	V. Benzene	KK. Trichlorofluoromethane	ZZ. 2-Chlorotoluene	OOO. 1,3,5-Trichlorobenzene
H. 1,1-Dichloroethene**	W. trans-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	AAA. 1,3,5-Trimethylbenzene	PPP. trans-1,2-Dichloroethene
I. 1,1-Dichloroethane*	X. Bromoform*	MM. 1,2-Dibromo-3-chloropropane	BBB. 4-Chlorotoluene	QQQ. cis-1,2-Dichloroethene
J. 1,2-Dichloroethene	Y. 4-Methyl-2-pentanone	NN. Diethyl ether	CCC. tert-Butylbenzene	RRR.
K. Chloroform**	Z. 2-Hexanone	OO. 2,2-Dichloropropane	DDD. 1,2,4-Trimethylbenzene	SSS.
L. 1,2-Dichloroethane	AA. Tetrachloroethene	PP. Bromochloromethane	EEE. sec-Butylbenzene	TTT.
M. 2-Butanone	BB. 1,1,2,2-Tetrachloroethane*	QQ. 1,1-Dichloropropene	FFF. 1,3-Dichlorobenzene	UUU.
N. 1,1,1-Trichloroethane	CC. Toluene**	RR. Dibromomethane	GGG. p-Isopropyltoluene	VVV.
O. Carbon tetrachloride	DD. Chlorobenzene*	SS. 1,3-Dichloropropane	HHH. 1,4-Dichlorobenzene	WWW.

* = System performance check compounds (SPCC) for RF ; ** = Calibration check compounds (CCC) for %RSD.

ZZZ 1,1,2 - Trichlorotrifluoroethane (FR113)

Notes:

LDC #: 6038C23
SDG #: 2K122OW1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: FT
2nd reviewer: ~

METHOD: GC Volatiles (EPA SW 846 Method 8010/8020)

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration (ng/L)		RPD
	3	4	
O	27	24	12
H	3.0	3.0	0
ZZZ	7.0	6.5	7.4

Compound	Concentration (ng/L)		RPD
	9	10	
O	61	67	9.4
K	1.7	1.8	5.7
H	8.2	7.5	8.9
N	29	30	3.4
S	28	31	10
ZZZ	1.0	1.0	0

Compound	Concentration ( )		RPD

Compound	Concentration ( )		RPD